

REMARKS

This application has been carefully reviewed in light of the final Office Action dated September 13, 2010. Claim 8 has been newly added. Claims 1 to 8 are pending in the application, of which Claims 1 and 7 are in independent form. Reconsideration and further examination are respectfully requested.

Claim 7 was rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 6,395,564 (*Huang*). Claims 1, 3 and 4 were rejected under 35 U.S.C. § 103(a) over *Huang* in view of U.S. Patent No. 6,417,019 (*Mueller*). Claim 2 was rejected under 35 U.S.C. § 103(a) over *Huang* in view of *Mueller* and further in view of WO 2000/12226 (Jones). Claim 5 was rejected under 35 U.S.C. § 103(a) over *Huang* in view of *Mueller* and further in view of U.S. Patent Application Publication No. 2003/0181122 (Collins). Claim 6 was rejected under 35 U.S.C. § 103(a) over *Huang* in view of *Mueller* and further in view of U.S. Patent No. 6,483,196 (Wojnarowski). Applicant submits that independent Claims 1 and 7, together with the claims dependent therefrom, are patentably distinct from the cited prior art for at least the following reasons. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

Claim 1

Claim 1 is directed to a method for producing a white LED of predetermined color temperature, comprising:

“in a plurality of LEDs that includes uncoated blue LEDs or uncoated UV LEDs, or both, the uncoated blue LEDs or uncoated UV LEDs each having a respective wavelength, the wavelength of the uncoated blue LEDs or uncoated UV LEDs not all being equal, determining a respective wavelength of each respective uncoated blue LED or uncoated UV LED of the plurality of LEDs;

determining a single time a respective quantity and concentration of a conversion layer to be applied over each respective uncoated blue LED or uncoated UV LED of the plurality of LEDs based on at least the respective wavelength determined, wherein the conversion layer includes a color conversion agent, said color conversion layer configured to absorb at least one of blue light and UV light, and emit light of longer wavelength; and

coating each respective uncoated blue or UV LED individually, with the conversion layer having the respective quantity and concentration determined that single time in said step of determining the quantity and concentration, wherein each respective coated LED has the predetermined color temperature.”

Among other notable features of Claim 1 is determining a single time a respective quantity and concentration of a conversion layer to be applied over each respective uncoated blue LED or uncoated UV LED based on at least the respective wavelength determined. By virtue of this feature, a virtually constant color temperature over the whole emission surface of the LED may be provided. Moreover, since respective concentrations for each uncoated LED are individually determined a single time, the conversion layer may be applied in a single step such that a constant volume of the applied layer may be obtained.

Huang is seen to disclose a process in which all of the LEDs provided on a wafer are measured in a first step, and in a second step, different doses of phosphor are applied to the measured LEDs. See *Huang*, column 3, lines 24 to 26, and lines 40 to 43.

At page 5, the Office Action concedes that “*Huang* is silent with respect to explicitly disclosing the concentration may also be determined for the light conversion layer.” However, the Office Action alleges that it would have been obvious to modify

Huang as taught by *Mueller* such that “determining the conversion layer comprises determining both the quantity and concentration”. Applicant respectfully disagrees.

Applicant submits that the rationale applied in the rejection is defective because the proposed modifications of *Huang* would change the principle of operation of *Huang*. See MPEP § 2143.01 VI. In considering whether the principle of operation of the prior art invention is changed, courts have considered whether the suggested combination of references would require a substantial reconstruction and redesign of the elements shown in the primary reference as well as a change in the basic principle under which the primary reference construction was designed to operate. See MPEP § 2143.01 VI.

The proposed modification would change the principle of operation of *Huang*’s process for fabricating LEDs. *Huang*’s process is a linear process in which all of the LEDs are measured in a first step, and thereafter different doses of phosphor are applied to the measured LEDs in a final step. The proposed modification of *Huang*’s process, using the teaching of *Mueller*, would change the principle of operation of *Huang*’s process by changing the process from a linear process in which LEDs are measured before phosphor is applied, to an iterative process in which LEDs are measured after phosphor is applied.

Mueller is seen to disclose a LED which is disposed in a reflective cup which contains transparent material in which are dispersed phosphor particles. See *Mueller*, column 5, lines 22 to 27. The phosphor particles are typically dispersed in material at a concentration of about 5% to about 35% by weight. See *Mueller*, column 5, lines 58 to 62. The concentration of phosphor particles is determined experimentally by measuring the emission spectrum corresponding to a trial concentration of phosphor particles, and then the concentration is adjusted as necessary. See *Mueller*, column 6, lines

19 to 26. The composition and concentration of phosphor particles may be varied iteratively until the desired chromaticity is achieved. See *Mueller*, column 7, lines 3 to 5. The LED includes a multilayered epitaxial structure disposed on a buffer layer, which in turn is disposed on a substrate. See *Mueller*, column 4, lines 65 to 67. In some cases, a phosphor film is deposited on the substrate prior to the growth of the epitaxial structure. See *Mueller*, column 8, lines 27 to 31.

Thus, *Mueller* is seen to disclose measuring an emission spectrum corresponding to a trial concentration of phosphor particles, and then iteratively varying the composition and concentration of phosphor particles until the desired chromaticity is achieved. In contrast to *Huang*, *Mueller*'s measurement is seen to be performed after a trial concentration of phosphor particles has been applied to the LED.

Accordingly, *Mueller* is believed to be silent on determination of a wavelength of a LED before phosphor particles have been applied. Moreover, *Mueller* teaches away from an initial determination of a LED's wavelength before application of phosphor particles, since *Mueller* discloses a case in which a phosphor film is deposited on the substrate of the LED prior to the growth of the epitaxial structure of the LED, and thus prior to measurement of the wavelength of the completed LED.

Indeed, *Mueller* is also believed to be silent on determination of a quantity and concentration of the conversion layer based on a wavelength determined prior to application of the conversion layer.

Therefore, the proposed modification of *Huang*'s process, using the teaching of *Mueller*, would change the principle of operation of *Huang*'s process by changing the process from a linear process in which LEDs are measured before phosphor is applied, to an iterative process in which LEDs are measured after phosphor is applied.

Accordingly, the proposed modification of *Huang* using the teaching of *Mueller* would change the principle of operation of *Huang*'s process for fabricating LEDs.

Moreover, the suggested combination of *Huang* and *Mueller* would require a substantial reconstruction and redesign of the elements shown in *Huang* due to the technical difficulties in combining the teachings of *Huang* and *Mueller*.

Accordingly, those of ordinary skill in the art would conclude that the proposed modifications would not have been obvious. Therefore, the applied references are not sufficient to render Claim 1 *prima facie* obvious. See MPEP § 2143.01 VI.

Thus, Claim 1 and the claims dependent therefrom are believed to be allowable over *Huang* in view of *Mueller*. Because each dependent claim also is deemed to define an additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

Claim 7

Claim 7 is directed to a white LED light source, comprising:

“a plurality of blue LEDs or UV LEDs, and, above each of said LEDs, a conversion layer, wherein the conversion layer has a thickness, above a particular one of the blue or UV LEDs, that is proportional to a determined wavelength of that particular blue or UV LED, and wherein the thickness of the conversion layer is increased for a respective longer wavelength and decreased for a respective shorter wavelength.”

Among other notable features of Claim 7 is that the thickness of the conversion layer is increased for a respective longer wavelength and decreased for a respective shorter wavelength. In other words, Claim 7 defines a direct proportionality between the thickness of the conversion layer and a wavelength.

Huang is seen to disclose that the dose of phosphor forming on the LED is reduced when the wavelength emitted from the LED is longer than a standard wavelength, and the dose is increased when the emitted wavelength is shorter than the standard wavelength. See *Huang*, column 3, line 59, to column 4, line 5. Thus, *Huang* is seen to disclose an inverse proportionality between the dose and the wavelength.

Huang is not believed to teach or suggest “the thickness of the conversion layer is increased for a respective longer wavelength and decreased for a respective shorter wavelength”, as recited in Claim 7.

Accordingly, Applicant submits that Claim 7 is not anticipated by *Huang*, and respectfully requests withdrawal of the rejection under 35 U.S.C. § 102(b).

CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

No claim fees are believed due. However, should it be determined that additional claim fees are required under 37 C.F.R. 1.16 or 1.17, the Director is hereby authorized to charge such fees to Deposit Account 06-1205.

Applicant's undersigned attorney may be reached in our Costa Mesa, California office by telephone at (714) 540-8700. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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